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SEASONAL CHANGES IN BROILER CHICK
PLACEMENTS AND MARKETINGS 1/

Producers of commercial broilers generally place the most chicks in the spring and the fewest in the fall. Two factors, one basically biologic, the other economic, contribute to the seasonal nature of broiler chick placements.

In the spring, the supply of hatching eggs is plentiful, but it diminishes from July through October as total output of large eggs declines. Further, the percentage of fertile eggs declines at that season as hens approach the end of a laying period. Consequently, the potential supply of chicks in the fall is reduced unless specific practices are undertaken to assure a steady supply of chicks. However, these practices increase costs and occur at a time when broilers from resulting placements would often bring prices below the annual average, thereby largely eliminating the incentive to overcome the biologic limitation on hatching egg production. Also, hot weather in the summer is a disadvantage for growing broilers, and farmers may reduce or delay their mid-year chick orders for that reason.

From the economic aspect, the supply of competing products, principally beef, pork, farm chicken, and turkey, typically increases in the last few months of the year, tending to depress the demand for broilers. Producers may anticipate these developments and, therefore, reduce placements to be marketed towards the end of the year. In addition, seasonal labor requirements of competing farm enterprises and seasonally larger income from crops may reduce broiler operations at that time.

The figure with this article illustrates average seasonal changes in broiler chick placements and marketings for 2 periods, 1941-43 and 1953-55. In the earlier period there appeared to be 2 peaks in chick placements, April and December. With about a 12-14 week production period needed to bring a chick to marketable weight at that time, marketings were largest in March and almost as large in July, with extreme seasonal changes occurring within the year. The earlier of those 2 peak marketings may have been timed for Easter.
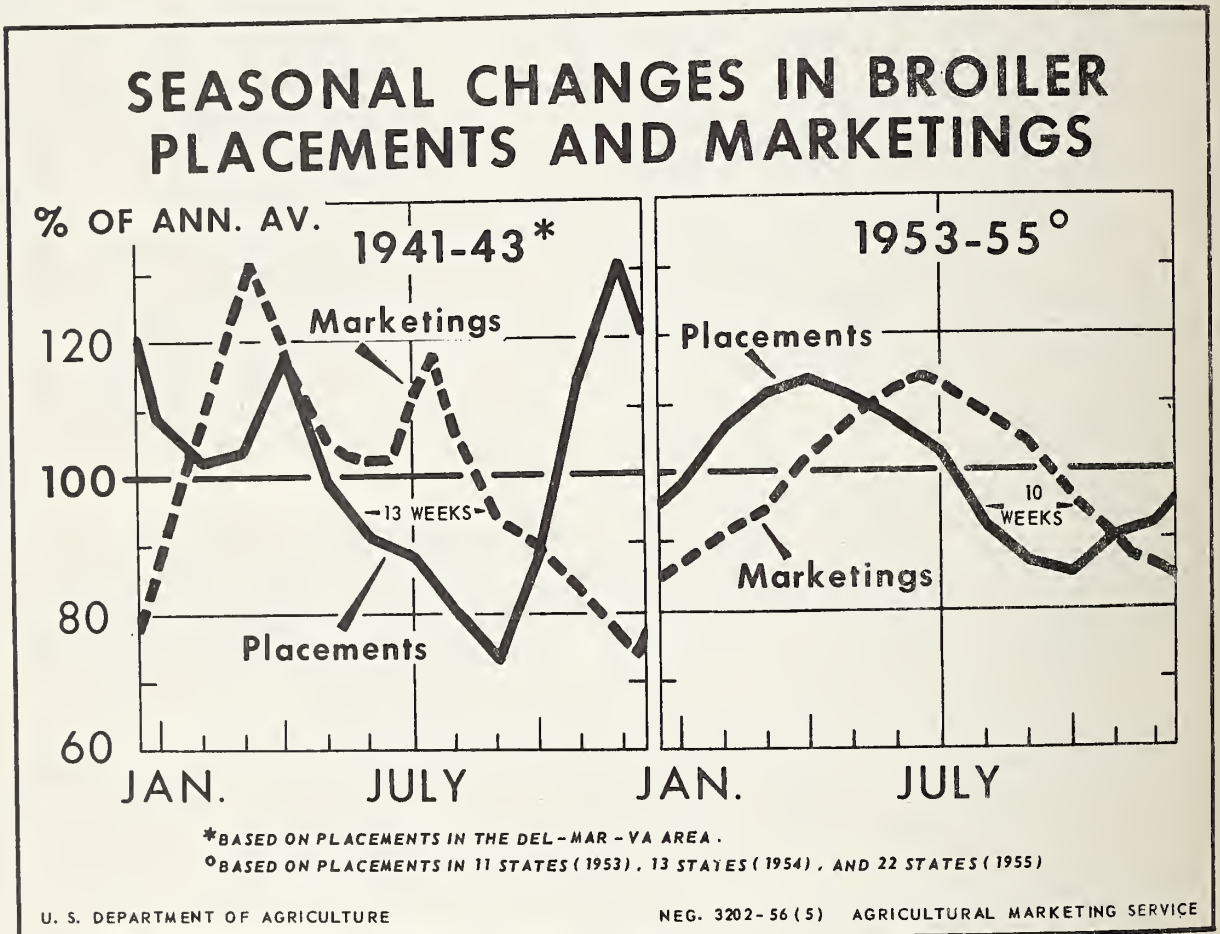
Currently, placements have become more evenly timed throughout the year, although a pronounced seasonal change from April to October is still present. The declining placements from December to March, which characterized the early 1940's, no longer appear to be the pattern. Rather, average 1953-55 placements had only a single peak, increasing steadily from the low of October to a high in April, then declining to the October low.

1/ Prepared by Martin J. Gerra; based on research under authority of the Agricultural Marketing Act of 1946 (RMA, Title II). Reprinted, in part, from The Poultry and Egg Situation, PES-183, Agricultural Marketing Service, May 1956.

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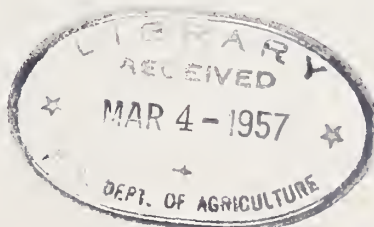
With increased feeding efficiency and improved flock management shortening the production span from the former 12-14 weeks to a 9-11 week span today, peak marketing of broilers now typically occurs in mid-summer. Despite large marketings at that time, prices then are generally above the average for the year. Many economists attribute this phenomenon to a strong seasonal demand for broilers, stemming from outdoor cooking and the desire for easily prepared, less fatty foods in the heat of summer. Marketings of meat animals also are seasonally low at this time and prices are seasonally high.

Table 1 shows the average weekly rates of broiler chick placements during each month for selected areas. Weekly placements were assigned to the month in which the first day of each week fell. While weekly placement data were available for only part of the United States, the areas included in table 1 represented the most important commercial broiler production areas

SEASONAL CHANGES IN BROILER PLACEMENTS AND MARKETINGS

% OF ANN. AV.

1941-43*

Marketings

13 WEEKS

Placements

120

100

80

60

JAN.   JULY

1953-55°

Placements

Marketings

10 WEEKS

JAN.   JULY

*BASED ON PLACEMENTS IN THE DEL-MAR-VA AREA.
°BASED ON PLACEMENTS IN 11 STATES (1953), 13 STATES (1954), AND 22 STATES (1955)

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in the United States during the respective years. For example, placements in the Del-Mar-Va area, after a 10 percent allowance for mortality, were more than a quarter of the reported U. S. commercial broiler production in 1942. In 1955, mortality-adjusted broiler chick placements in the 22 reporting States were about 88 percent of the national figure. 1/

To obtain the seasonal adjustment factors for marketings, it is only necessary to lead the factors for adjusting broiler chick placements by the appropriate time span between placement and marketing. For example, in 1941-43, the average time required to bring a chick to marketable weight probably ranged between 12-14 weeks. Therefore, as shown in the figure, the curve representing the average 1941-43 seasonal adjustment factors was moved forward 13 weeks to indicate the index of seasonal variation for marketings of broilers. For the 1953-55 data, the curve was advanced only 10 weeks.

Computing Seasonal Changes:

As the first step in measuring seasonal changes in broiler chick placements, weekly data on placements in selected areas were adjusted to average weekly rates during each month.

Link relatives of the average weekly rates of placements were obtained and formed into a chain index with November 1954 used as the base period. Table 2 lists the chain index computed for the broiler chick placement data, the seasonal adjustment factors, and the chain index data after adjustment for seasonality.

To avoid extreme changes due to a shift in reporting coverage, overlapping link relatives were obtained for the months when additional data became available.

For example, in December 1945 only data from the Del-Mar-Va area were available. The link relative from December 1945 to January 1946, based on the Del-Mar-Va data, is 2,369 divided by 986 or 240.3 percent. In January 1946 data became available for four commercial areas. The change from January to February 1946, would be 1,578 divided by 2,464, or 64.0 percent, rather than 986 divided by 2,464, or 40.0 percent, based only on the Del-Mar-Va data. In computing the chain index, the index value for February 1946, 37.3 was multiplied by 64.0 percent to obtain the January 1946 index

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1/ For both 1942 and 1955, these placements include the chicks placed in the last 10 or 13 weeks of the preceding calendar year, and omit chicks placed in a corresponding number of weeks at the end of the given calendar year.

Table 1 .- Monthly broiler chick placements, average weekly
rates, selected areas, 1941 to date 1/

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.
					(a) Del-Mar-Va							
1941	1,104	1,141	1,157	1,144	1,128	1,095	1,139	1,070	927	1,109	1,452	2,012
1942	1,478	1,409	1,419	1,117	1,110	1,382	1,404	1,237	1,122	1,215	1,580	1,982
1943	1,698	1,444	1,358	1,469	1,349	1,384	1,285	1,162	1,137	1,586	2,024	1,767
1944	1,723	1,906	2,427	2,287	1,821	1,480	1,144	996	886	1,355	1,973	2,792
1945	2,496	2,301	2,612	2,863	2,618	2,502	2,053	1,776	1,800	2,187	2,522	2,369
1946	986											
					(b) Four commercial areas 2/							
1946	1,578	2,464	2,632	3,837	2,702	1,618	1,806	1,766	1,895	2,666	3,804	2,119
1947	3,118	3,128	3,766	3,207	3,115	3,551	3,247	2,948	2,483	2,525	2,634	2,449
1948	3,048											
					(c) Seven commercial areas 3/							
1948	4,244	4,353	4,572	5,354	5,094	4,856	4,517	3,936	3,758	4,319	5,652	6,132
1949	6,566	6,584	6,928	7,029	6,877	6,416	4,974	4,617	5,148	6,533	6,210	5,907
1950	6,162	6,621	8,111	7,488	7,031	7,240	7,232	7,178	7,218	6,766	6,623	7,300
1951	7,753											
					(d) Eleven commercial areas 4/							
1951	9,125	10,856	11,467	12,215	12,138	11,607	10,964	9,836	9,060	8,832	9,896	10,721
1952	11,547											
					(e) Eleven States 5/							
1952	11,793	13,899	13,594	12,321	11,375	11,251	10,130	9,012	9,170	9,969	10,990	11,478
1953	12,077	12,263	13,316	13,538	13,306	12,871	11,514	10,458	10,153	11,002	12,770	12,931
1954	13,384											
					(f) Thirteen States 6/							
1954	14,484	14,876	15,655	16,131	15,392	14,968	14,882	13,882	13,187	11,775	12,052	11,204
					(g) Twenty two States 7/							
1954											15,282	14,128
1955	15,578	19,972	20,218	22,067	22,616	22,845	22,181	19,684	17,656	18,368	19,284	20,510
1956	21,266	23,374	24,861	26,534								

1/ Placements are classified into the month on which the first day of each week falls.
2/ Del-Mar-Va, North Georgia, West Virginia and parts of Virginia.
3/ Eastern Connecticut, Del-Mar-Va, Shenandoah Valley (Virginia and West Virginia),North Carolina (Chatham and Wilkes), North Georgia, Northwest Arkansas, and Texas.
4/ Seven commercial areas listed above plus Alabama,Mississippi, Florida, and Indiana.
5/ Alabama, Northwest Arkansas, Del-Mar-Va, Florida, Georgia, Indiana, Mississippi, North Carolina, Oregon, Shenandoah Valley (Virginia and West Virginia),and Texas.
6/ States listed above plus California, Connecticut and Maine.
7/ Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Louisiana, Maine, Maryland, Mississippi, Missouri, North Carolina, Oregon, Pennsylvania, South Carolina, Texas, Virginia, Washington, West Virginia.
   Data for Del-Mar-Va (1941-46) from: Gwin, James M. The Delmarva Broiler Industry, Md. Agr. Expt. Sta. Bul. A-57, 1950; data for four commercial areas (1946-47) are from unpublished records of the USDA; data for 1948 to date published weekly by USDA.

Table 2 .- Monthly index of average weekly rate of broiler chick placements,
seasonal variation, and seasonally adjusted index, 1941 to date

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	(a) Monthly index of average weekly rate (November 1954=100)											
1941	27.0	27.9	28.3	28.0	27.6	26.8	27.9	26.2	22.7	27.2	35.6	49.3
1942	36.2	34.5	34.7	27.3	27.1	33.7	34.2	30.1	27.3	29.6	38.5	48.3
1943	41.4	35.2	33.1	35.8	32.9	33.7	31.3	28.3	27.7	38.6	49.2	43.0
1944	41.9	46.3	59.0	55.6	44.3	36.0	27.8	24.2	21.5	32.9	47.9	67.7
1945	60.5	55.8	63.3	69.4	63.4	60.6	49.7	43.0	43.6	53.0	61.1	57.4
1946	23.9	37.3	39.9	58.1	40.9	24.5	27.3	26.7	28.6	40.2	57.4	32.0
1947	47.0	47.1	56.7	48.3	46.9	53.5	48.9	44.4	37.4	38.0	39.6	36.8
1948	45.8	47.0	49.4	57.8	55.0	52.4	48.7	42.4	40.5	46.5	60.9	66.0
1949	70.7	70.9	74.6	75.7	74.1	69.1	53.6	49.8	55.5	70.4	66.9	63.7
1950	66.4	71.3	87.4	80.7	75.8	78.1	78.0	77.4	77.9	73.0	71.4	78.7
1951	83.5	99.3	104.9	111.7	111.0	106.1	100.2	89.9	82.8	80.7	90.5	98.1
1952	105.7	124.7	122.0	110.6	102.1	101.0	90.9	80.9	82.3	89.5	98.7	103.1
1953	108.5	110.2	119.6	121.5	119.5	115.6	103.4	93.9	91.2	98.8	114.6	116.0
1954	120.1	123.3	129.8	133.8	127.7	124.2	123.5	115.2	109.4	97.7	100.0	92.4
1955	101.9	130.6	132.2	144.2	147.8	149.3	145.0	128.6	115.4	120.0	126.0	134.1
1956	139.1	152.9										
	(b) Index of seasonal variation 1/											
1941	109	102	104	117	99	91	89	81	73	88	112	134
1942	109	103	104	118	100	91	89	81	73	89	113	132
1943	109	103	104	118	100	91	88	80	73	89	114	130
1944	110	104	106	120	102	93	84	77	74	92	117	122
1945	109	105	111	122	105	96	84	76	75	94	116	109
1946	106	104	114	124	107	100	86	77	76	94	112	100
1947	104	104	116	123	109	103	89	78	78	92	108	95
1948	102	105	117	120	109	105	93	82	80	91	102	93
1949	102	105	118	118	110	106	95	84	82	89	96	93
1950	102	107	118	115	109	106	96	87	84	88	94	96
1951	101	109	117	114	109	106	97	89	84	86	92	96
1952	101	108	116	113	109	106	99	90	85	86	91	96
1953	100	107	114	113	109	107	100	92	86	86	90	95
1954	99	107	111	114	111	108	103	93	87	86	90	93
1955	98	107	109	114	112	108	105	94	88	86	90	90
	(c) Seasonally adjusted monthly index of average weekly rate											
1941	24.8	27.4	27.2	23.9	27.9	29.5	31.3	32.3	31.1	30.9	31.8	36.8
1942	33.2	33.5	33.4	23.1	27.1	37.0	38.4	37.2	37.4	33.3	34.1	36.6
1943	38.0	34.2	31.8	30.3	32.9	37.0	35.6	35.4	37.9	43.4	43.2	33.1
1944	38.1	44.5	55.7	46.3	43.4	38.7	33.1	31.4	29.1	35.8	40.9	55.5
1945	55.5	53.1	57.0	56.9	60.4	63.1	59.2	56.6	58.1	56.4	52.7	52.7
1946	22.5	35.9	35.0	46.9	38.2	24.5	31.7	34.7	37.6	42.8	51.2	32.0
1947	45.2	45.3	48.9	39.3	43.0	51.9	54.9	56.9	47.9	41.3	36.7	38.7
1948	44.9	44.8	42.2	48.2	50.5	49.9	52.4	51.7	50.6	51.1	59.7	71.0
1949	69.3	67.5	63.2	64.2	67.4	65.2	56.4	59.3	67.7	79.1	69.7	68.5
1950	65.1	66.6	74.1	70.2	69.5	73.7	81.2	89.0	92.7	83.0	76.0	82.0
1951	82.7	91.1	89.7	98.0	101.8	100.1	103.3	101.0	98.6	93.8	98.4	102.2
1952	104.7	115.5	105.2	97.9	93.7	95.3	91.8	89.9	96.8	104.1	108.5	107.4
1953	108.5	103.0	104.9	107.5	109.6	108.0	103.4	102.1	106.0	114.9	127.3	122.1
1954	121.3	115.2	116.9	117.4	115.0	115.0	119.9	123.9	125.7	113.6	111.1	99.4
1955	104.0	122.1	121.3	126.5	132.0	138.2	138.1	136.8	131.1	139.5	140.0	149.0

1/ Yearly totals do not necessarily add to 1,200 due to rounding.

value of 23.9. The latter value, in turn was multiplied by 240.3 percent to obtain the December 1945 index value of 57.4. The chain index values of the average weekly rate of broiler placements, by months, for the period 1941 to date are presented in table 2, rounded to whole numbers.

Because the chain index data reflected a changing seasonal pattern in broiler chick placements, a moving seasonal index was constructed to allow for the shift in the timing of broiler placements. Briefly, the seasonal adjustment factors in table 2 were obtained by (1) computing the monthly ratios of the chain index data to a centered 12 month moving average of the data; (2) computing a 5 year moving total of the ratios obtained in step (1) and adjusting the 5 year moving totals to eliminate the extreme high and low value; (3) fitting a smooth free-hand curve to the adjusted 5 year moving totals for each month; and (4) adjusting the free-hand curve values to equal 1,200 in each year. 1/

To measure the reduction brought about in the variation of the monthly values around their annual mean value by using the seasonal adjustment factors, coefficients of variation 2/ were computed for the original data and the seasonally adjusted data for the years 1941-43 and 1953-55. In the former period, the value of the coefficient of variation was 20.4 percent for the original data and 14.5 percent for the seasonally adjusted data, a reduction of almost 30 percent in relative variation. For the latter period the coefficients of variation are 13.0 percent for the original data and 10.8 percent for the seasonally adjusted placement data. While the reduction in relative variation brought about by adjusting for seasonal changes was not as large in 1953-55 as in 1941-43, it should be recognized that the relative variation in the latter period was appreciably smaller than the variation in the early 1940's.

1/ The Census Bureau has programmed for UNIVAC a method for obtaining a comparable moving seasonal index. The UNIVAC method was tested against the hand-fitted method described above, which allows the statistician to exercise some flexibility in fitting. Except for slight differences in the values for the beginning and most recent years of data, the two methods gave approximately the same results. Because the hand method described here is more costly, it would appear preferable in the future to compute seasonals by the UNIVAC method.

2/ The coefficient of variation is the value of the standard deviation expressed as a percentage of the arithmetic mean. The standard deviation may be described as a measure of the relative dispersion, or scatter, of a group of observations about their mean value.

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